

## ChemRisk/Shonka Research Associates, Inc., Document Request Form

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Date of request 9/5/95 Expected receipt of document \_\_\_\_\_

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Title and author (if document is unnumbered)

Ltr # ER-K-94/263 "Historical Investigation of  
K-1405-6 Development and Test Facility" from P. Goddard  
with attached Summary

Name ADC Reviewer Patty Goddard

Date Sent to ADC 9/6/95

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Signature \_\_\_\_\_

## Internal Correspondence

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MARTIN MARIETTA ENERGY SYSTEMS, INC.

ER020764



Date: October 12, 1994

To: A. R. Belt, B. Foster, P. J. Halsey, B. Howard, J. R. Lyons,  
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File—K-25 ER RA Project Files, File—ER Document Management  
Center—RC

From: P. L. Goddard, K-1330, MS-7298, 6-3692 *PLG*

Subject: Historical Investigation of K-1405-6 Development and Test Facility

The attached summary of the recently completed subject document details the operations and potential contaminants that could be expected from this facility. This report is a good example of the type of information required to do a complete, integrated Remedial Action/Decontamination & Decommissioning project. This report will be published as a stand-alone document so that it will be available whenever we get the opportunity to begin any work on the K-1405-6 Facility. We will continue this level of effort on future historical investigations and will be prioritizing upcoming historical investigation work in the near future. If you get the time to review this document, I would appreciate any comments, especially if they pertain to future reports and investigations. However, there will be no formal review and comment cycle for this document. I will notify you shortly of our upcoming work on future historical investigations.

If you have questions or require additional information, please contact me at 6-3692.

PLG:shs

Enclosure

This document has been reviewed for  
classification and has been determined to  
be UNCLASSIFIED.

*P. L. Goddard*  
ADC Signature

9-6-95

Date

This document has been approved for release  
to the public by:

*William J. Smith* 9/19/95  
Technical Information Officer Date  
Oak Ridge K-25 Site *WJS*

The Oak Ridge K-25 Site is managed by  
Martin Marietta Energy Systems, Inc.,  
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# HAZARDOUS WASTE SITES HISTORICAL INVESTIGATION

## SITE 67

### K-1405 C-216 (HF) DISPOSAL PLANT, K-1405-6 DEVELOPMENT AND TEST FACILITY

## SUMMARY

The historical record of the K-1405-6 building and surroundings has been investigated to determine the potential sources of soil and groundwater contamination resulting from the varied uses of the facility. The building and environs were traced through 50 years of use, first as a disposal plant for low concentration fluorine gases and then as a development facility investigating and applying a variety of technologies in gaseous diffusion and related processes. Because of the distinct differences in development activities which occurred, this investigation was divided into eight periods.

The history of the K-25 Plant through the 1940s and 1950s has become more difficult to obtain from retiree/employee information sources because of availability and recall. Reliance must be placed on documents, reports, engineering drawings, and records requiring extensive searches - hampered by inadequate indices and current storage conditions. Knowledge, experience, and helpfulness which are provided by the first line personnel at the records and engineering resource centers are to be commended in successfully retrieving pertinent information.

Initial design objectives and construction of the K-1405 Hydrogen Fluoride Disposal Plant and its short-lived operating period are described. This period was followed by takeover and modifications to make K-1405-6 a development facility. Details of the various development activities are presented to cover further building modifications and equipment installations to carry out the development work in each time period. Potential contaminants employed or generated in each period of plant or development activities, which are discussed in the text, are summarized below.

- 1st period - 1944 to 1946 *C-216 Disposal Plant*. Oil and grease lubricants, cleaning solvents, mercury and sulfuric acid are minor compared with spills and discharges of sodium fluoride, calcium fluoride, sodium uranate, uranyl fluoride, and caustic which were expected to have occurred in the operation, shut down, and clean up of the plant. The plant's sludge, containing 1500 to 2000 pounds of uranium plus 90,000 pounds of spent carbon-alumina-uranium, was discarded in a specially constructed concrete pit; however no record of its subsequent removal and recovery has been found.
- 2nd period - 1947 to 1952 *Chemical and Mechanical R&D; Pilot Plant for  $UO_3$  to  $UF_6$  Manufacturing*. Potential contaminants from development activities in this period include spent carbon-alumina-uranium mix, fluorocarbon oils, carbon tetrachloride, cobaltous fluoride, mercury, trichloroethylene, normal and depleted uranium, as well as irradiated  $UO_3$  recovered from Hanford reactor tails by the Purex process and converted to  $UF_6$  in the K-1405-6 Pilot Plant.

- 3rd period - 1953 to 1959 *Storage, Intermittent Laboratory Use, Experimental Testing.*  
No specific contaminants were identified.
  - 4th period - 1960 to 1969 *High Temperature Laboratory; Outside Work Related*  
Specific contaminants were selenium, nickel, and uranium. Other metals include zirconium, molybdenum, rhenium, tungsten, tantalum, aluminum and copper.
  - 5th period - late 1960s to early 1980s *High Temperature Laboratory; CIP/CUP Related*  
This development work is classified and will be presented later as a classified supplement.
  - 6th period - 1984 to 1985 Part I - *Safeguards Studies, Uranium Deposition.*  
Uranium releases from test apparatus would be small due to small inventory at very low pressures. Other contaminants were 1420-B fluorocarbon oil and Varian Pump Fomblin fluid YL-UAC 25/5 lubricant.
- 6th period, Part II - *AVLIS Coating Application Studies.*  
This K-1405-6 development activity was not discovered until recently, when an employee information source, contacted on safeguard studies, made it known. The development work will be reported later as a classified supplement.
- 7th period - 1986 to 1991 *Environmental Air Sampling.*  
Potential contaminants included methylene chloride, hexane, methanol, acetone and detergents. Other materials were potassium permanganate, hydrogen peroxide, sulfuric acid, vacuum pump lubricants, mercury, and spent silica gel. By this period, controls had been established on the collection and disposal of laboratory wastes; discharge of solvent vapors and gases from laboratory hoods to atmosphere were also controlled.
  - 8th period - August 1991 to date *Vacant, Candidate for D&D .*  
The Environmental Sampling section vacated K-1405-6 in August 1991 as a result of the identification of high levels of radioactive contamination from development activities conducted in this facility during previous periods. A Phase I Hazard Screening Analysis was issued for the building in March 1992; see text for further details.